

Office Memorandum • UNITED STATES GOVERNMENT

TO : Isotope Extension Files

DATE: December 18, 1957

FROM : J.W. Hitch *JWH*SUBJECT: OFFICE VISIT OF U.S. RADIUM CORPORATION TO ISOTOPES EXTENSION ON
12/17/57

Visit was conducted with Mr. H.H. Dooley, Chief, Chemical Division and Dr. John MacHutchin, Director of Research for Radioactive Products. Isotope Extension personnel were JWH, LPG, and REB and JRM for portions of the meeting. The purpose of their meeting was to discuss preliminary drawings of prototypes of lanterns to be used for railroad signals. They further stated that New York Central Railroad hoped to install 54 of these lanterns on the main line on 9 ft. pedestals in addition to the much larger number to be used in the Elkhart, Indiana classification yards. A sample of label for this device was discussed and suggestions made. Also, the desirability of how such a label would be attached. They stated that they proposed to attach a metal label with symbol and necessary information to the top housing of the lantern. Mr. Dooley asked whether or not the sign should be on the bottom of those lanterns mounted on 9 ft. staffs. Suggested that he label all lanterns near the top where they could be readily seen when being handled by maintenance personnel since the lantern on a 9 ft. staff offered very little hazard.

They stated that they were striving for a maximum dose level of 20 mr/hr at the surface and the question arose as to the need for radiation area marking. Mr. Mason suggested that if dose level was less than 5 mr/hr at a foot that this requirement might be eliminated. However, the lamp would require a radioactive material label as agreed upon.

U.S. Radium is to build prototypes out of a one piece cast aluminum which will have 4 bulbs containing 150 mc of Krypton 85 mounted in a reflector behind a rectangular screen and window lenses. The aluminum casting incorporates bulbs, reflector, screen and lenses and will be mounted to a steel plate by hidden screws which may be solder sealed or some type of epoxy resin. The base is in turn mounted to the switch stand and locked in place. This will be true of both the Elkhart switch lamp and the main line switch lamps as previously referred to. The top of the aluminum casting enclosing the lantern will have a durable handle mounted on an angle to prevent both loiters sitting on lamps and have the lamps hanging at an angle for better protection to the person carrying the device.

Miscellaneous discussion:

1. Pointed out to Mr. Dooley and Dr. MacHutchin that some of their customers were submitting applications which were incomplete in so far as enabling us to evaluate the hazard due to radioactive material and the method by which devices containing radioactive material would

be secured against unauthorized possession. Made particular reference to St. Louis Shipbuilding application which stated that isotopes would be used to activate phosphor. Requested that this information was already known to us and we would like more descriptive details as to the purpose of the phosphor.

2. Discussed with U.S. Radium personnel a complaint from Inspection about a lost deck marker and the nature of the hazard involved. Examined one of the markers which indicated that marker was radioactive, containing Sr 90, and should be buried as a disposal method. Mr. Mason discussed possible hazards and the difficulty by which the Navy might have in controlling the use and possession of 300,000 markers. Agreed that the matter needs some further examination but it is now understood that the Navy is working toward Krypton as a method of activating phosphorus.
3. Discussed Polonium foil being used in static-master brushes and that we felt that some evaluation with regard to melting points of foil as well as the Polonium should be made by either U.S. Radium or Nuclear Products. Mr. Dooley agreed that U.S. Radium should make such tests since they were the manufacturers of the foil. Also pointed out that we had some questions with regard to Tritium foils in Sargent-Rayment "gard". Mr. Dooley reported that they were fabricating foils both for Wesix Heater and Sargent-Rayment.
4. Discussed with Mr. Dooley and REB the recent inspection of their facilities by New York Operations on 10/2/57.
 - a. Learned that a new record system for personnel monitoring had been established and that all 4 individuals who have received excessive exposure in the past have been reassigned to non-radiological jobs until the overall exposure picture can be brought within the requirements of the regulations.
 - b. Permissible levels of radiation in unrestricted areas at the waste disposal silo is being surrounded by a 6 ft. fence which Mr. Dooley states will be effective in controlling entry into this area.
 - c. Surveys: Have established a routine survey system whereby surveys are made 3 times a week and smears are made each morning prior to the commencing of work to evaluate atmospheric fallout on work surfaces, floors, etc. Mr. Dooley also stated that air surveys would be made on other days when extra ordinary hazardous operations are being carried out.
 - d. Caution signs, labels, etc. Scrapped hoods and other items found improperly posted during inspection have been corrected.
 - e. Export of byproduct material: Mr. Dooley admitted that he had shipped Tritium to the Canadians without proper export license thinking that other isotopes other than 3 to 83 group may be exported without specific license. He agreed to advise us of this export and ask

the AEC to take whatever action necessary and too that he would apply for additional export in the very near future.

Mr. Dooley was informed that they would receive a letter from us confirming the findings of the Inspection Division and that to complete our records we would like to have essentially the information contained in his response during this meeting. This he agreed to.

Office Memorandum • UNITED STATES GOVERNMENT

TO : Files

DATE: September 24, 1957

FROM : J. W. Hitch & L. P. Gintz

SUBJECT: OFFICE VISIT OF T. W. TAYLOR, U. S. RADIUM CORPORATION AND J. A. SMITH AND
F= M. GEIGER, NEW YORK CENTRAL SYSTEM, on 9-16-57

Visit was to discuss our requirements for licensing radioactive light sources to be used in railroad lanterns installed in a classification yard at Elkhart, Indiana.

They propose to install 236 lamps and have 6 additional lamps as spare parts in the Elkhart yard. They desired a definite answer as to whether such a proposal appeared to be within our realm of licensing within the immediate future, since they needed to make a decision immediately as to whether to install the necessary wiring for electric lamps if the radioactive lamps would not be approved. At the conclusion of their visit, they were advised that we felt confident that a license could be issued after some additional details were worked out.

Mr. Taylor stated that the lanterns would be redesigned to include some type of relatively sharp point on the top of the lantern so the personnel would be discouraged from sitting on them. Also, they plan on using chicken wire reinforced glass behind the lenses so that the source could not be reached in the event that a lens was broken by vandalism. The lanterns will be labeled with the standard radioactive materials caution label, which will be described by U. S. Radium in their final drawing. They agreed to provide a method of installing the lamps on the switch mechanisms which would require a special type wrench or key to remove. Upon completion of the redesign, final drawings will be submitted to this office for review.

They also considered increasing the shielding somewhat, to reduce the radiation level at the outside of the lantern. However, Mr. Taylor felt that this would probably not be necessary in order to meet our requirements. On the experimental lantern they found the maximum surface radiation to be approximately 40 mr/hr. According to rough calculations, which were also supported by some radiation survey made by Mr. Geiger, the radiation at 1 foot from the device is believed to be approximately 4 mr/hr. They were advised by JWH that we would permit up to 5 mr/hr at a foot. The amount of Krypton 85 used in the bulb will depend upon the color which they desire. Red bulbs require 150 millicuries, while the other colors require considerably less than this amount.

It was agreed that the men who maintain the lanterns will wear personnel monitoring badges. Studies will be made to determine the necessity or non-necessity of other railroad employees wearing personnel monitoring devices. For this particular yard, there is little possibility of non-employees getting near the lantern, since a classification yard is very dangerous to begin with, and in addition, is well patrolled by railroad police.

They would also like to obtain approval for installing 1170 of these lanterns on the main line. However, they decided to delay their application for this project until details have been worked out on their Elkhart, Indiana installation.